

Causes of an elevated serum lactate dehydrogenase level

Cardiac	<p>Myocyte injury</p> <ul style="list-style-type: none"> ▪ Demand ischemia ▪ Trauma, cardiovascular surgery ▪ Toxins ▪ Infection (myocarditis, rheumatic fever) ▪ Drugs (alcohol, chemotherapy, cocaine, methysergide, carbon monoxide) <p>Hepatic congestion</p> <ul style="list-style-type: none"> ▪ Heart failure <p>Hemolysis</p> <ul style="list-style-type: none"> ▪ Prosthetic valves
Central nervous system disorders	<ul style="list-style-type: none"> ▪ Bacterial meningitis ▪ Cerebral hemorrhage ▪ Cerebral venous thrombosis
Drug-induced	<ul style="list-style-type: none"> ▪ Neuroleptic agents (neuroleptic malignant syndrome) ▪ Withdrawal of L-Dopa or dopamine agonist ▪ Serotonin syndrome ▪ Malignant hyperthermia ▪ Recreational drugs ▪ Myopathies (colchicine, antimalarials, cholesterol-lowering drugs, cocaine, alcohol, glucocorticoid)
Endocrine	<ul style="list-style-type: none"> ▪ Hypothyroidism ▪ Acromegaly ▪ Cushing's syndrome ▪ Diabetic muscle infarction
Gastrointestinal	<ul style="list-style-type: none"> ▪ Acute pancreatitis ▪ Intestinal obstruction ▪ Early acute hepatitis ▪ Ischemic hepatitis
Hematologic	<p>Hemolytic anemias</p> <ul style="list-style-type: none"> ▪ Inherited (spherocytosis, sickle cell disease, deficiency of red blood cell enzymes) ▪ Acquired (microangiopathic hemolytic anemia, PNH, immune hemolysis) <p>Ineffective erythropoiesis</p> <ul style="list-style-type: none"> ▪ Pernicious anemia, folic acid deficiency ▪ Iron deficiency ▪ Primary myelofibrosis
Infection	<ul style="list-style-type: none"> ▪ Pneumocystis pneumonia (late) ▪ Tuberculosis ▪ Malaria ▪ Parasitic ▪ Legionnaires disease ▪ Histoplasmosis ▪ Toxoplasmosis
Malignancy	<ul style="list-style-type: none"> ▪ Leukemias ▪ Lymphomas ▪ Solid tumors (testicular germ cell tumors) ▪ Tumor lysis syndrome (large tumor burden)
Neuromuscular	<ul style="list-style-type: none"> ▪ Myopathies (inherited, acquired, drug) ▪ Periodic paralyses
Pregnancy	<ul style="list-style-type: none"> ▪ Preeclampsia ▪ Adnexal mass in pregnancy ▪ HELLP syndrome
Pulmonary	<ul style="list-style-type: none"> ▪ Pulmonary embolism, infarction ▪ Pulmonary alveolar proteinosis
Renal	<ul style="list-style-type: none"> ▪ Renal infarction
Rheumatologic	<ul style="list-style-type: none"> ▪ Dermatomyositis ▪ MCTD ▪ Rheumatoid arthritis ▪ Scleroderma ▪ Sjögren's syndrome ▪ SLE
Trauma	<ul style="list-style-type: none"> ▪ Rhabdomyolysis

	<ul style="list-style-type: none">▪ Surgery
Vasculitis	<ul style="list-style-type: none">▪ Polyarteritis nodosa▪ Eosinophilic granulomatosis with polyangiitis (Churg-Strauss vasculitis)▪ Granulomatosis with polyangiitis [Wegener's]▪ Behçet's syndrome▪ Sarcoidosis
Idiosyncratic LDH elevation	The presence of macro-LDH (LDH combined with an immunoglobulin), not associated with any symptoms or particular disease

PNH: paroxysmal nocturnal hemoglobinuria; HELLP: hemolysis, elevated liver enzymes, low platelets; MCTD: mixed connective tissue disease; SLE: systemic lupus erythematosus; LDH: lactate dehydrogenase.

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